

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
1 CONGRESS STREET - SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0040193**

PUBLIC NOTICE DATE:

NAME AND ADDRESS OF APPLICANT:

**INIMA, USA Corporation
115 West Chestnut Street
Brockton, Massachusetts 02301**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Taunton River Desalination Plant
455 Somerset Avenue
Dighton, Massachusetts 02564**

RECEIVING WATER: **Taunton River
Taunton River Watershed (62)**

CLASSIFICATION: **Class SB**

I. Proposed Action, Type of Facility and Discharge Location

INIMA USA CO, has applied to the U.S. Environmental Protection Agency to issue an NPDES permit to discharge into the Taunton River. The proposed desalination facility will be located in the Town of Dighton, MA approximately 14 miles upstream from the mouth of the Taunton River. The proposed facility will withdraw up to 10 million gallons per day (MGD) of brackish water from the Taunton River to supply approximately 5 MGD of potable water to communities in southeastern Massachusetts. The facility will discharge wastewater from a reverse osmosis treatment unit.

The applicant filed a complete application for a new discharge permit required by 40 Code of Federal Regulations (CFR) §122.6. The facility location is shown on Figure 1 of this fact sheet. The draft permit will be written to reflect conditions at the new facility.

II. Limitations and Conditions

The effluent limitations and monitoring requirements may be found in the draft NPDES permit.

III. Permit Basis and Explanation of Effluent Limitation Derivation

Facility Description

The treatment plant will consist of an immersed membrane ultrafiltration (UF) and reverse osmosis (RO) system. Figure 2 is a copy of the process diagram of the facility. All intake water will be treated in the UF treatment facilities. All wastes from the UF facilities will be dewatered on-site and disposed off-site. The RO facilities will operate only when the salinity of the intake water exceeds drinking water standards to remove salt molecules from the intake water. This is expected to occur during the months of July through November, when the receiving fresh water flow is low. The only wastewater discharge authorized by this permit is the discharge of brine from the RO system.

The plant withdrawals will be scheduled according to the river height and salinity levels. The intake will occur when the river velocity minimizes impingement and entrainment of aquatic organisms and will not be withdrawn at low tide because it could cause the intake velocity to exceed the maximum velocity criteria established by the Division of Marine Fisheries. The salinity modeling results show that on average the salinity levels in the vicinity of the intake will not vary more than 2 parts per thousand (ppt). The Environmental Impact Report (EIR) documents this finding, and this slight variation is considered insignificant on aquatic organisms.

The wastewater from the RO treatment process is called brine concentrate and will be discharged to the Taunton River after blending with raw water. The draft permit requires that the salinity of the discharge be within ± 2 ppt of the average ambient salinity levels during each discharge cycle. EPA and MassDEP have determined that this condition is protective of water quality and have established it as an effluent limitation in the draft permit.

In order to withdraw water with relatively low salinity and to achieve the discharge salinity requirements, the intake and discharge are tied to the tidal cycle. Water is withdrawn from the river on the incoming tide until a predetermined salinity level is reached. The final effluent will be discharged near high tide when the salinity of the receiving water closely matches the salinity of the discharge. Figure 3 is a diagram showing the anticipated intake and discharge cycles over a twenty-four hour period.

The facility is expected to operate in a conventional freshwater mode during the months of December through June. During this time, the ambient salinity levels in the river are generally below the required drinking water standard and the RO units will not be in operation during this time. The permit does not limit the months in which the discharge is authorized, and the plant will be able to operate in desalination mode at any time during the year when salinity levels in the intake exceeds drinking water standards. Therefore, the permit will be in effect whenever wastewater from the RO units is discharged to the Taunton River.

General Requirements

The Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States without a National Pollutant Discharge Elimination System (NPDES) permit unless such a discharge is otherwise authorized by the CWA. The NPDES permit is the mechanism used to implement technology and water quality-based effluent limitations and other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with various statutory and regulatory requirements established pursuant to the CWA and any applicable State regulations. The regulations governing the EPA NPDES permit program are generally found at 40 CFR Parts 122, 124, 125, and 136.

Technology-based Requirements

Technology-based requirements represent the minimum level of control that must be imposed under Sections 301(b) and 402 of the CWA. See 40 CFR §125 Subpart A. For existing sources, technology-based requirements according to best practicable control technology (BPT) currently available are applied for conventional, non-conventional, and toxic pollutants. There are no applicable technology-based effluent guidelines for this industry. In the absence of published guidelines, the permit writer is authorized under Section 402(a)(1) of the CWA to establish effluent limitations on a case-by-case basis using best professional judgment (BPJ). See 40 CFR §§125.3 (c)(2) and (c)(3).

The factors to be considered in developing BPJ limits are set forth at 40 CFR §§ 125.3(c)(2)(i) and (ii) and 125.3(d)(3)(i) - (vi) and include, among other things, the age of the existing facility, engineering issues, process changes, non-water quality-related environmental impacts, and the costs of achieving required effluent pollutant reductions. A review of two reports written by the American Water Works Association on the management of brine from desalination facilities, the Environmental Impact Report and subsequent Notice of Project Change Reports for this facility, and NPDES permits issued by EPA to similar facilities in Region 1 were reviewed by both Agencies to address these issues.

The effluent discharged into the River will be blended brine composed of concentrate brine mixed with raw river water. The Agencies review of treatment techniques under regulation 40 CFR 125.3(f) to establish the means of effluent blending at this facility is in accordance with the regulation. Regulations found at 40 CFR 125.3(f) state that technology-based treatment requirements can not be satisfied through the use of non-treatment techniques such as flow augmentation and instream mechanical aerators. However, these techniques may be considered as a method of achieving water quality standards on a case-by-case basis. The discharger must demonstrate that such a technique is the preferred environmental and economic method of achieving the standards after consideration of alternatives such as advanced waste treatment, recycle and reuse, land disposal, changes in operating methods and, other available methods. Accordingly, the draft permit requires that technology based limits be met prior to blending, but the use of blending to achieve water quality based limits is allowed, as described in subsequent sections of the fact sheet .

Water Quality-Based Requirements

Under Section 301(b)(1)(C) of the CWA and EPA regulations NPDES permits must contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve state or federal water quality standards.

Water quality standards consist of three parts: (1) beneficial designated uses for a water-body or a segment of a water-body; (2) numeric and/or narrative water quality criteria sufficient to protect the assigned designated use(s); and (3) antidegradation requirements to ensure that once a use is attained it will not be degraded. The Massachusetts Surface Water Quality Standards, found at 314 CMR 4.00, include these elements. The state will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained or attained. These standards also include requirements for the regulation and control of toxic constituents and require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that causes or has the "reasonable potential" to cause or contribute to an excursion above any water quality standard (see 40 CFR §122.44(d)). An excursion occurs if the projected or actual in-stream concentration exceeds an applicable water quality criterion. In determining "reasonable potential", EPA considers: (1) existing controls on point and non-point sources of pollution; (2) pollutant concentration and variability in the effluent and

receiving water as determined from the permit's reissuance application, monthly discharge monitoring reports (DMRs), and State and Federal Water Quality Reports; (3) sensitivity of the indicator species used in toxicity testing; (4) known water quality impacts of processes on waste waters; and (5) where appropriate, dilution of the effluent in the receiving water.

As described earlier, federal regulations allow the use of blending to achieve water quality based limits where such a technique is the preferred environmental and economic method of achieving the standards after consideration of alternatives such as advanced waste treatment, recycle and reuse, land disposal, changes in operating methods and, other available methods. A review of two reports written by the American Water Works Association on the management of brine from desalination facilities, the Environmental Impact Report and subsequent Notice of Project Change Reports for this facility were reviewed by EPA and MassDEP to address these issues.

EPA and MassDEP researched disposal methods at water treatment plants using reverse osmosis in other States and found surface water discharge of brine concentrate to be common. The primary ecological concern is the salinity change in the receiving water and its effect on the native habitat as a result of the concentrated brine discharge.

An article in the December 2004 issue of the Journal of American Water Works Association confirms that surface water discharge is the most common disposal practice for brine concentrate. The concentrate contains naturally occurring constituents that are in the RO feed water and are well suited for surface water discharge. Furthermore, the article explains there are facilities that dilute or blend the concentrate with surface water or groundwater before discharging the diluted brine into the receiving water. The article explains that a high salinity discharge should not be discharged into a low-receiving salinity water if the effluent causes a 10% or more increase in salinity from the upstream receiving water. The effluent being discharged from this facility is substantially below 10% of the salinity levels of the receiving water. See Journal of American Water Works Association, Committee Report: Current Perspectives on Residual Management for Desalting Membranes, December 2004.

Water Quality Standards and Designated Uses

Water Quality Standards

The Taunton River, at the point of discharge, is classified as a Class SB waterbody by the Massachusetts Department of Environmental Protection (MassDEP). Class SB waters are designated as a habitat for fish, other aquatic life and, for primary and secondary contact recreation. In approved areas, Class SB waters shall be suitable for shellfishing with depuration.

Flow

The flow limit in the draft permit is 5.4 MGD. Because the permit limits the salinity concentration of the discharge, the effluent will be batch discharged following high tide (2.7 MG per tidal cycle) for approximately one hundred minutes during each tidal cycle when the receiving water salinity is highest. A batch discharge compared to a continuous discharge increases the flow rate of the discharge. The rate of flow for this facility has been calculated as 43.2 MGD ($2.7 \text{ MG} / 1.5 \text{ hours} = 1.8 \text{ million gallons per hour}$, or 43.2 MGD).

Available Dilution

The Massachusetts State Water Quality Standards defines mixing zones and the criteria which must be met in 314 CMR 4.03 (2).

Mixing Zones: In applying these standards the Division may recognize a limited area or volume of waterbody as a mixing zone for the initial dilution of a discharge. Waters within a mixing zone may fail to meet specific water quality criteria provided the following conditions are met:

- (a) Mixing zones shall be limited to an area or volume as small as feasible. The location, design and operation of the discharge shall minimize impacts on aquatic life and other beneficial uses.
- (b) Mixing zones shall not interfere with the migration or free movement of fish or other aquatic life. There shall be safe and adequate passage for swimming and drifting organisms with no deleterious effects on their populations.
- (c) Mixing zones shall not create nuisances conditions, accumulate pollutants in sediments or biota in toxic amounts or otherwise diminish the existing or designated uses of the segment disproportionately.

The Cornell Mixing Zone Expert System model (CORMIX) was run to determine the initial dilution in the immediate vicinity of the discharge. Attachment 4 presents the mixing zone analyses and the results of the three model simulations. Simulation 3 most closely represents the condition which will exist at the start of the discharge (river velocity 0.1 feet per second, salinity of discharge and receiving water the same). As can be seen in the analysis, there is very little initial mixing at the start of the discharge, given that the velocity of the receiving water is zero (slack high tide). Therefore, for purposes of calculating acute water quality-based limitations the Agencies have used a dilution factor of 1.0 (zero dilution) for calculating acute limits.

Salinity

As described previously, the draft permit requires that the salinity of the final effluent be within +/-2 ppt of the average ambient salinity levels of a discharge cycle. Salinity levels in this section of the Taunton River fluctuate between 1 ppt and 9 ppt. This is within the normal range of salinity and not expected to adversely affect aquatic organisms, including EFH species.

Conventional Pollutants

Total Suspended Solids

In accordance with Section 402(a)(1) of the CWA and 40 CFR 125.3, technology-based limitations based on best professional judgement are included in the draft permit. These limits include an average monthly of 20 mg/l and an average weekly limit of 30 mg/l. As described earlier, these limits apply to the concentrated brine rather than to the blended discharge. These BPJ limits are consistent with BPJ limits for similar facilities in Region I (see the Region I general permit for Reject Water From Reverse Osmosis Units) and are also consistent with an article in the Journal of American Water Works Association, which identifies <30 mg/l + raw water TSS as a representative limitation for TSS of a surface water discharge. See AWWA Residual Management Research Committee Subcommittee report on Residuals Management for Low-pressure Membranes, Journal of American Water Works Association, June 2004.

These limits are also protective of water quality. Based on data from the pilot tests, the level of total suspended solid in the river upstream of the discharge will be higher than the TSS level in the concentrated brine, given that the ultrafiltration process will remove almost all TSS from the RO feed water. Therefore the concentrated brine will tend to dilute the TSS in the raw water, reducing the TSS in the blended effluent to less than the receiving water TSS.

pH

The pH limits in the draft permit are based on Massachusetts Surface Water Quality Standards. The pH of the final effluent shall be in the range of 6.5 to 8.5 standard units or equivalent to the natural pH river conditions. There shall be no change from background conditions that would impair any use assigned to this class. Attachment 5 of this fact sheet shows pH levels in the receiving water and pH levels of the concentrated brine and based on this data it is expected that the blended brine will consistently meet the permit requirements.

Dissolved Oxygen (D.O.)

State water quality standards require that the D.O. in SB waters not be less than 5.0 mg/l unless background conditions are lower. Data submitted with the permit application show the dissolved oxygen level in the Taunton River at the point of discharge on occasion is less than 5.0 mg/l. Therefore, the draft permit stipulates that the dissolved oxygen level in the final effluent will be equivalent to or greater than the dissolved oxygen level in the river.

Nonconventional Pollutants

Nonconventional pollutants typically associated with reverse osmosis systems were identified by reviewing data from a pilot study conducted in 2003 and desalination facilities currently in operation. The table below shows monitoring results on several parameters from the unblended brine concentrate collected during the pilot study. Effluent limits have been included in the draft permit for pollutants that exceed ambient levels in the receiving water or show a reasonable potential to cause or contribute to an exceedance of water quality criteria.

The draft permit includes permit limits for copper and monthly monitoring requirements for TDS, nitrite/nitrate, total Kjeldahl nitrogen, ammonia-nitrogen, lead and arsenic. The concentration of zinc in the unblended brine does not need to be included as a monitoring requirement in the draft permit because levels were well below the acute criteria

Table 1 - Pilot Demonstration Sampling Results

	Acute Water Quality Criteria	5/19/ 2003	5/28/2003	6/4/2003	6/10/2003	6/12/2003
TDS	----	1100 mg/l	750 mg/l	890 mg/l	660 mg/l	600 mg/l
Ammonia	----	<0.5 mg/l	0.71 mg/l	<0.5 mg/l	<0.5 mg/l	<0.5 mg/l
Copper	0.0048 mg/l	0.014 mg/l	<0.01 mg/l	0.006 mg/l	0.004 mg/l	0.004 mg/l
Zinc	0.090 mg/l	0.047 mg/l	0.048 mg/l	0.033 mg/l	0.035 mg/l	0.007 mg/l

Copper

Copper samples from the pilot plant were submitted by the permittee, comparing the concentration of copper in raw water with the concentration in the unblended brine in 2003. Table 2 shows levels of copper in the brine concentrate slightly higher than ambient levels in the receiving water.

Table 2 – Concentration of Copper in the River Compared with Concentration of Copper in the Brine

Date	Copper concentration in river water	Copper Concentrations of Unblended Brine Concentrate
June 4, 2003	0.004 mg/l	0.006 mg/l
June 10, 2003	0.003 mg/l	0.004 mg/l
June 12, 2003	0.003 mg/l	0.004 mg/l
May 28, 2003	<0.01 mg/l	<0.01 mg/l
May 19, 2003	0.003 mg/l	0.014 mg/l

The water quality criteria for dissolved copper in salt water found in the National Recommended Water Quality Criteria: 2002 are 3.1 ug/l (chronic) and 4.8 ug/l (acute). As can be seen from the pilot plant data, the background concentration of copper in the receiving water approximates these values, and the concentration in the unblended brine occasionally exceeds these concentrations. With an acute dilution factor of one, there is reasonable potential for the discharge of copper to cause or contribute to an exceedance of water quality standards. Pursuant to 40 CFR §122.44(d) a limit must be included in the permit. The Agencies do not believe that there is a need for a chronic limit, given the intermittent nature of the discharge, and because mixing of each batch discharge will be rapid once the velocity of the receiving water increases on the outgoing tide, about an hour after the start of the discharge.

In establishing the acute limit, the Agencies considered that copper is not added to the discharge any time during the treatment process; in fact the total mass of copper discharged to the receiving water is expected to be lower than the intake, given that substantial amounts of copper will be removed in the ultrafiltration processes (wastes from these processes will be sent off-site for disposal). It is reasonable to assume an increase in copper levels in the concentrated brine compared to the intake concentration due to the removal and concentration of copper by the RO unit. Because the copper in the discharge is solely from the intake water, the effluent limit for copper shall be no greater than the intake concentration.

The draft permit requires the permittee to collect weekly samples of both the intake and discharge during the first year of the permit, and specifies that effluent concentration shall not exceed the intake concentration. After one year the permittee may request a reduction in the number of copper samples required if the data collected shows consistent compliance with the permit limit. EPA will review the discharge monitoring data to make a determination if a reduction in the sampling requirements is appropriate. The permittee is required to continue testing as specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

Total Residual Chlorine (TRC)

Chlorinated water will be used periodically to clean the membrane filters. The draft permit includes limits for total residual chlorine based on state water quality standards. Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The maximum concentration criteria for chlorine in salt water is 13 ug/l and the average concentration criteria is 7.5 ug/l. A dilution factor of 1.0 dictates that daily maximum limit in the draft permit is 13 ug/l. The permit does not include an average monthly limit because the discharge is intermittent rather than continuous.

Whole Effluent Toxicity

Based on the potential for toxicity resulting from the discharge, and in accordance with EPA regulation and policy, the draft permit includes acute and chronic toxicity limitations and monitoring requirements. (See, e.g., “Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants”, 50 Fed. Reg. 30,784 (July 24, 1985); see also, EPA’s Technical Support Document for Water Quality-Based Toxicities Control. EPA Region I has developed a toxicity control policy. The policy requires treatment facilities to perform toxicity testing for state certification. The frequency and the type of WET test depends on the dilution ratio and risk factor.

Pursuant to EPA Region I policy, discharges having a dilution ratio of less than 10:1 are required to complete four toxicity tests per year. The required toxicity tests have been reduced in the draft permit because the RO units are only scheduled to be in operation from July through November. The permit may be modified if the anticipated schedule changes and wastewater is discharged year round. The toxicity tests requirements will increase to four tests per year.

EPA's protocol also specifies a LC₅₀ limit of $\geq 100\%$ for a facility with a dilution ratio less than 10:1. The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

The draft permit requires that the permittee conduct chronic and modified acute WET testing on Outfall 001 effluent two times per year. Each test must include the sea urchin Arbacia punctulata, and inland silverside Menidia beryllina in accordance with EPA Region I protocol to be found in permit Attachment A.

As a condition of this permit, the testing requirements for the number of species in the toxicity test may be reduced by a certified letter from the EPA. This permit provision anticipates that the permittee may wish to request a reduction in the number of species used in WET testing. After 4 consecutive WET tests that demonstrate compliance with the permit limits for whole effluent toxicity the permittee may submit a written request to the EPA seeking a review of the toxicity test results. The EPA will review the test results and pertinent information to make a determination if a reduction in the number of species used in the tests should be reduced. The permittee is required to continue testing as specified in the permit until the permit is either formally modified or until the permittee receives a certified letter from the EPA indicating a change in the permit conditions.

IV. Antidegradation

The State of Massachusetts, following its antidegradation review, has made a tentative determination that the effluent will not cause a significant lowering of water quality. The State has determined that all existing water uses will be fully protected and, the water quality necessary to protect the existing uses will be maintained and protected in the receiving water.

V. Essential Fish Habitat (EFH)

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act [16 U.S.C. § 1801 *et seq.* (1998)], EPA is required to consult with National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat" [16 U.S.C. § 1855(b)]. The Amendments broadly define "essential fish habitat" as waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity [16 U.S.C. § 1802(10)]. Adverse impact means any impact, which reduces the quality and/or quantity of EFH [50 C.F.R. § 600.910(a)]. Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. *Id.*

Essential fish habitat is only designated for fish species for which Federal Fisheries Management Plans exist [16 U.S.C. § 1855(b)(1)(A)]. The U.S. Department of Commerce approved EFH designations for New England on March 3, 1999.

Description of Proposed Action

The proposed Taunton River Desalination Plant will withdraw approximately 10 million gallons per day (mgd) of raw water from the Taunton River to supply an average of five mgd of potable water to local communities.

EFH Species

The Taunton River in the vicinity of Dighton, Massachusetts is listed as EFH for the following:

Species	Eggs	Larvae	Juveniles	Adults
Winter flounder (<i>Pseudopleuronectes americanus</i>)	X	X	X	X
windowpane flounder (<i>Scopthalmus aquosus</i>)	X	X	X	X
American plaice (<i>Hippoglossoides platessoides</i>)			X	X
Atlantic sea herring (<i>Clupea harengus</i>)			X	X
bluefish (<i>Pomatomus saltatrix</i>)			X	X
summer flounder (<i>Paralichthys dentatus</i>)		X	X	
scup (<i>Stenotomus chrysops</i>)	X	X	X	X
king mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	x	x
cobia (<i>Rachycentron canadum</i>)	X	X	X	X
sand tiger shark (<i>Odontaspis Taurus</i>)		X		

Major Forage Species

Major fish species in the Taunton River on which managed species prey include blueback herring (*Alosa aestivalis*), alewife (*Alosa pseudoharengus*), and Atlantic menhaden (*Brevoortia tyrannus*). Each year, blueback herring and alewife migrate up the Taunton River during spring months en route to natal spawning grounds. Alewife and blueback herring are collectively referred to as “river herring”. According to information provided by Massachusetts Division of Marine Fisheries, river herring offspring migrate down the Taunton River to marine waters throughout the summer and fall months. Juvenile Atlantic menhaden are commonly found in the lower Taunton River from August to late October, sometimes in schools that exceed a hundred thousand fish.

Analysis of Effects

This permit regulates the discharge of pollutants associated with the plant’s operation. Several pollutants may be present in the effluent and could adversely affect aquatic organisms if discharged at elevated concentrations. The salt waste that results from the reverse osmosis (RO) filtration process could form a high salinity plume relative to ambient conditions if discharged at high concentrations. This could possibly impede the movement of fish species and other aquatic organisms, or otherwise create intolerable habitat conditions. In addition to salt, pollutants contained in the raw river water such as copper, lead, zinc, and arsenic may remain in the brine concentrate, and represent potential sources of toxicity to aquatic organisms. Finally, chlorination of the potable water system would be routinely performed and could result in the discharge of chlorine compounds which can be toxic to aquatic organisms.

EPA’s Opinion of Probable Impacts

1. Salinity. While the plant will withdraw water year-round, the need to operate the RO units should be limited to July through November when salinity levels in the river tend to exceed drinking water standards. When the RO units are needed, water will be withdrawn during tidal stages when the salinity is comparatively low. Conversely, the brine concentrate will be mixed with raw river water and

discharged during tidal stages of higher salinity. This permit requires that the salinity of the effluent be within 2 parts per thousand (ppt) of the river's salinity at the time of discharge. This difference is within the normal range of salinity change in this section of the river (1-9 ppt), and is not expected to adversely affect aquatic organisms, including EFH species.

2. Nonconventional Pollutants. The permit requires that the effluent be monitored for the presence and concentration of certain pollutants that could cause toxicity to aquatic organisms. These include copper, lead, zinc, arsenic, and ammonia, among others. If effluent monitoring detects these pollutants at concentrations which reasonably could be expected to cause or contribute to a violation of state water quality standards, then EPA can modify this permit to include numeric limits for those pollutants.

3. Chlorination. EPA has concluded that there is a potential for this facility to discharge chlorine at levels that exceed state water quality criteria. Therefore, a chlorine numeric limit based on state standards and available dilution has been included in this permit.

In addition to the required monitoring of these specific pollutant parameters of concern, testing for chronic and acute whole effluent toxicity (WET) will be required quarterly to ensure the aggregate of known or unknown pollutants in the effluent are not toxic to aquatic organisms. EPA-Region 1 routinely requires WET testing for facilities whose dilution ratio is less than 10:1. The calculated available dilution for this facility is 1.0. The test species include one invertebrate (purple sea urchin (*Arbacia punctulata*)) and one fish species (Inland silverside (*Menidia beryllina*)).

Conclusion

The EPA believes that the effluent limitations, conditions, and monitoring requirements contained in the proposed permit are protective of state water quality standards and minimize impacts to aquatic organisms including EFH species, as well as their habitat and forage species. In addition to EPA's discharge permit requirements, design and operational requirements for the facility's raw water intake structure will be established in a state-issued Water Management Act (WMA) permit. It is EPA's understanding that these requirements will be designed to minimize entrainment and impingement impacts on early life stages of aquatic organisms associated with water withdrawal. A requirement to complete a comprehensive 12-month study of fishery resources in this section of Taunton River is also expected to be included in the WMA permit.

Mitigation

This NPDES permit should sufficiently minimize impacts to EFH from the discharge of pollutants such that additional mitigation is not warranted. If adverse impacts to EFH species or their habitats do occur either as a result of non-compliance, or from unanticipated effects from this activity, the permit may be modified. Additionally, if such an incident occurs, or if new information becomes available that changes the basis for our determination, then consultation with NMFS will be reinitiated.

VI. Endangered Species Act (ESA)

Under Section 7 of the ESA, federal agencies are required to ensure that any action they conduct, authorize, or fund is not likely to jeopardize the continued existence of any federally-listed species, or result in the adverse modification of critical habitat. Based on EPA's review of available data, there are no federally-listed species known to inhabit this area of the Taunton River. EPA has initiated informal consultation with both NMFS and the U.S. Fish and Wildlife Service to confirm the accuracy of this review.

VII. State Certification Requirements

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving waters certifies that the effluent limitations contained in the permit are stringent enough to

assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit will be certified.

VIII. Public Comment Period, Public Hearing, and Procedures for Final Decision

All persons, including applicants, who believe any condition of the draft permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to the U.S. EPA, Massachusetts Office of Ecosystem Protection (CMP), 1 Congress Street, Suite 1100, Boston, Massachusetts 02114-2023. Any person, prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues proposed to be raised in the hearing.

A public hearing may be held after at least thirty days public notice whenever, the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit, the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period and, after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of the final permit decision, any interested person may submit a request for a formal hearing to reconsider or contest the final decision. Requests for formal hearings must satisfy the requirements of 40 CFR 124.74, 48 Fed. Reg 14279-14280 (April 1, 1983).

IX. EPA Contact

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

Betsy Davis
Massachusetts NPDES Permit Program Unit (CPE)
1 Congress Street - Suite 1100
Boston, MA 02114-2023
Telephone: (617) 918-1576
FAX: (617) 918-0576

DATE

Linda M. Murphy, Director
Office of Ecosystem Protection
U.S. Environmental Protection Agency

